TRUCK FARMING IN THE MARIETTA SECTION

WASHINGTON COUNTY, OHIO

1920 - 1924

By

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The Purpose of the Investigation.

A five year farm business survey was conducted in the Marietta Truck section from 1920 to 1924 inclusive, by the Ohio Agricultural Experiment Station. The purpose of the survey was to determine the plan of organization and system of management as well as the farm practices prevailing in the section and to determine those which seemed to be more frequently associated with successful farms. The survey gave the opportunity for determining production trends and something of the adjustments made by producers to meet rapidly changing economic conditions.

Plan of Survey.

Representative farms were visited each year soon after the close of the trucking season. Sixty three farms were visited each of the five years. Standard farm business survey schedules were used with special blanks for additional information. A record was secured of the relation of numerous cultural practices to such factors as yield, time of maturity, and selling price. On each farm the soil on which truck crops were being grown were classified. The contribution of the farm toward the family living was secured for one year, that of 1924. Practically all receipts were taken from farm records, sale slips or reports issued by cooperative marketing organizations through which more than 75 per cent of the truck crops were marketed. A few farmers kept records of all receipts and expenses. Among other farms included were hill farms or those with none other than hill land on which to grow truck crops. In order to compare the organization of these hill farms with others the cooperation of the United States Department of Agriculture was secured in taking similar records from farms in Palmer Township for the three years 1920 to 1923 inclusive.

The Development of the Industry.

The production of truck crops has long been considered an important source of income in the vicinity of Marietta. Before the Civil War an enterprising farmer was laying the foundation for what proved to be a profitable farm business in the production and marketing of sweet potatoes. The Rathbone addition, which was named in honor of this pioneer, marks the location of the farm. Not only was a large acreage of sweet potatoes grown but a market extending beyond the Mississippi was developed for the plants. From 1880 to 1885 the industry was rapidly extended and at the time when most flourishing 40 acres of the crop was not uncommon for the farms along Muskingum. As the production of sweet potatoes industry declined in the early 90's as a result, partly of competition from more southern growers and partly because of the more common prevalence of disease, the present industry, the production of early vegetables, developed rapidly. Mr. J. N. Riley is given credit for being one of the pioneers of the industry. In 1875 he began the production of cabbage, tomatoes and other garden crops which were marketed in Marietta. By the 80's he had developed a wider market and was shipping vegetables to other towns. With the organization of produce houses in Marketta the production of early vegetables became quite a common industry. Tomatoes were first staked about 1879. The practice was common by the 90's when 1000 to 1500 plants was considered a large acreage. By 1900 the production of cucumbers reached its maximum. Several cars were shipped each day. The development along the Ohio above Marietta has been somewhat different. In the 70's clove onions were shipped by flat boat down the river. A production of 10 or 15 bushels per farm was considered an average. By 1880 watermelons had replaced onions, and were grown by fields and shipped out by boat loads. The Indiana melons were given credit for having won out in competition. Cantaloupes followed watermelons. Strawberries had replaced practically both cantaloupes and melons by the nineties. The production of strawberries was taken up by

some of the hill farm operators and to a limited extent by truck growers along the Muskingum. At the peak of production several cars were shipped each day during the production season. The shortage of labor which became apparent about 1900 is given as the cause for the decline in strawberry production. The early vegetable industry developed gradually during the first decade of the century. With the organization of a cooperative marketing organization, which was well under way by 1912, production increased rapidly. The production of tomatoes has been increased largely since 1920 at least by the extension of the industry back on to the hill land. The production of cabbage has been increased largely by an increase in the acreage grown by truck growers in the valleys. Potatoes rank next to tomatoes and cabbage in importance. Sweet corn and cucumbers are of less importance. In addition to Marietta, Lowell, Beverly, Stockport and Belpre have become shipping points of importance.

Natural Conditions.

Nature has endowed this section with numerous advantages for the production of early vegetables. Broad river valleys are protected by high hills. The hills serve to break the force of the cold winds and in early spring often hold a blanket of fog over the valleys protecting the vegetation from late frosts. The soil which varies from a heavier loam on the first bottom to a sand or gravel on the second and third, drains well and warms up quickly at the first break of winter. A marked contrast is apparent between the warm valley soils and the cooler soils of the hills in winter or early spring when the snow melts first in the valleys leaving the crest of the hills still capped with snow. The natural climatic advantages of the section are expressed on the isothermal map by a sharp upward turn of the isothermal lines following the Ohio River indicating that the climate in the vicinity of Marietta especially in the early spring is similar to that of places a hundred miles far-

Fig. I.

Isothermal map for April 1916. The map represents near normal temperatures for the month. The map shows the sharp upward trend of the isothermal lines for the vicinity of Marietta. From Bulletin 314, Ohio Weather for 1916, Ohio Experiment Station.

ther south.

The section is further favored by its proximity to one of the most intensive industrial sections of the entire country. Several river valleys afford direct railroad routes to Pittsburgh, the center of the steel industry and to other central western cities the center of the automobile industry. The advantage of the location is further increased by the fact that this industrial section is cut off from the eastern coastal plains vegetable producing section by the Appalachian mountain system.

The natural advantages of the district have been more fully utilized by means of a cooperative marketing organization. The association was one of the first to be organized for the marketing of vegetables. Efforts of the association have been directed in line of quality production, efficient advertising, definite grades, and a standard pack. The trade mark has long had a wide and favorable reputation throughout the vegetable consuming centers. In addition to the establishment and supervision of production conditions, grades and packs, the cooperative organization has performed such functions of marketing as furnishing capital, carrying the risk of the market and assemblying at the local shipping point.

Distribution of the Farms Selected.

In selecting farms for the study care was taken to choose a proportional number of representative farms from each of the main sections of the district. The various sections include the older section at the junction of the Ohio and Muskingum rivers in which the organization had its birth, the newer sections along the Muskingum river, and the hill section, all of which sold by far the larger part of their products through the cooperative marketing association, and the Rockland section which at that time had its own marketing organization. Each section varied somewhat in type of production and farm organization, but on all the farms the production of truck crops was by

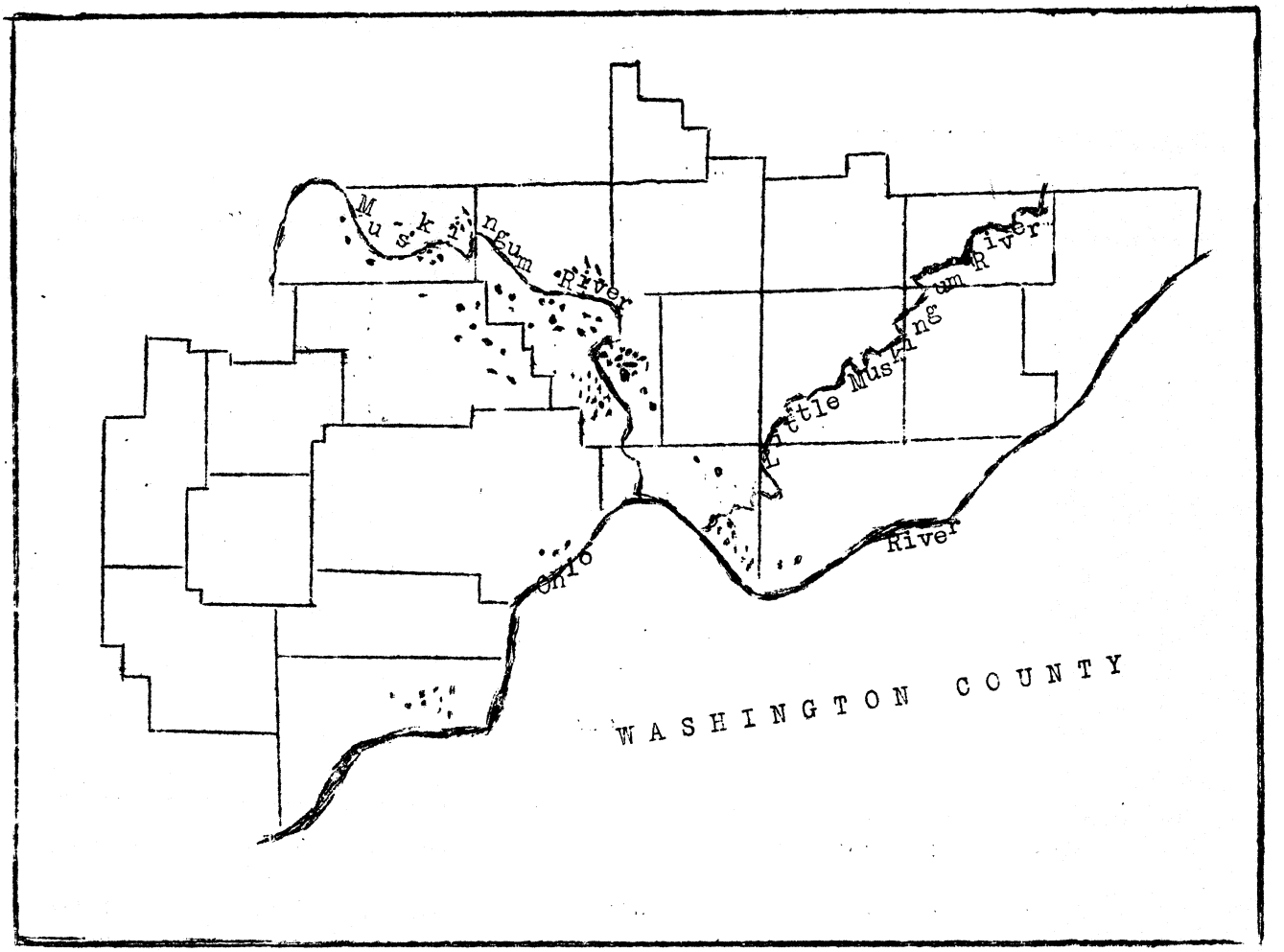

Fig. II.

The dots indicate the distribution and approximate location of the 96 farms included in the Marietta Truck Survey, one or more of the five years 1920 to 1924.

far the most important source of income. Table I shows the distribution of the 63 farms, included in the survey every year, throughout the various sections of the district.

Table 1. Distribution of the Farms included in the Marietta Truck Farm Business Survey.

Shipping Point	Location of Farms	Number of farms		
Marietta	Reno, Valley	6		
	Reno, Hill	1		
	West side, Valley	6		
	Gravel Bank	1		
	Devols Dam	15	29	
Lowell	Valley	4		
	Rainbow	4		
	Hill Farms	7	15	
Waterford	Valley farms	6		
	Coal Run	3		
	Hill Farms	4	13	
Rockland	Valley Farms		6	63

The records of production and sale of truck crops by the Association afford a means of ascertaining the approximate proportion of the entire production of the district that was covered by the survey. From data presented in Table II it is apparent that the 90 farms included in the survey the first year represented from 50% to 70% of the total production of all association members for crops other than sweet corn and 90% for sweet corn. At that time the Association was shipping 70% of the entire production of the district other than Rockland. It is, therefore, evident that the 90 farms were of considerable importance, marketing approximately one-third of the total volume shipped from the district.

Table II. Production of Truck Crops by all Association Members and by 90 Selected Farms.

Crop	All Association Members	90 Selected Farms	The 90 Farms Per Cent of all The Association
Acres of Truck Crops			
Tomatoes	338 Acres	183.0 Acres	54.4 %
Cabbage	270	205.8	76.2
Cukes	65	29.8	45.7
Sweet Corn	109	90.9	90.1
Number of Packages Shipped			
Tomatoes	236,609 baskets	119,548 baskets	55.2 %
Cabbage	45,191 crates	27,927 crates	61.8
Cukes	5,634 hampers	3,657 hampers	64.9
Sweet corn	7,758 hampers	4,319 hampers	94.4
Value of Products Shipped			
Tomatoes	$268,517	$127,406	47.4 %
Cabbage	142,540	90,274	63.4
Cukes	7,446	4,186	56.2
Sweet Corn	11,450	11,075	96.7

That the 63 farms records which were secured every year were typical of the 90 is indicated by the comparison shown in Table III.

Note. The relatively large amount of sweet corn produced by the 90 growers is explained by the more extensive growing of that crop by the farm operators in the Rockland section. The relatively low production of tomatoes is explained through the comparison of the 90 farms with all Association members on basis of sales per farm. The 90 farms represent a proportional sample of all size groups except the group with receipts from truck crops less than $500 per farm. Such farms were intentionally not included in the survey. Farms of that group are mostly hill farms with less than an acre of tomatoes and in organization of farm are between the hill farms near Marietta and the Palmer Township farms.

Table III. Farm Business Summary 63 Farms included in the Farm Business Survey Each Year and 90 Farms Included the First Year. Marietta Truck Section 1920 to 1924.

Item	Average for 63 Farms	Average for 90 Farms	Per Cent 63 are of 90
Acres in farm, total	68.8	64.3	107
Waste land	3.7	3.8	97.4
Woodland	6.0	5.9	101.7
Cultivated	29.5	29.1	101.3
Field crops	22.2	21.6	102.8
Truck Crop	7	6.9	102.9
Tomatoes	2.1	2.1	100.0
Cabbage	1.8	1.7	105.9
Sweet Corn	1.1	1.0	110.0
Cucumbers	.3	.3	100.0
Other truck crops	1.7	1.8	94.4
Capital total	$13,650	$13,573	100.6
Real estate	11,259	11,301	99.6
Buildings	3,522	3,552	99.2
Land	7,737	7,748	99.9
Livestock	852	800	106.6
Feed and supplies	596	547	109.0
Machinery and tools	635	634	100.2
Stakes and sash	308	292	105.5
Receipts, Total	3,855	3,754	102.7
Field crops	138	181	76.2
Truck crops	2,963	2,833	104.6
Tomatoes, baskets sold	1,383	1,328	104.1
Tomato receipts	1,499	1,416	105.9
Cabbage, crates sold	321	310	103.5
Cabbage receipts	1,055	1,003	105.2
Livestock sales	356	313	114.1
Purchases	115	108	106.5
Livestock products sold	263	253	104.0
Net receipts from livestock	538	488	110.2
Other receipts	58	62	93.5
Expense, Total	1,766	1,709	103.3
Hired labor	495	480	103.1
Family labor	140	138	101.4
Package costs	271	255	108.6
Taxes	98	96	102.1
Farm Income	2,090	2,046	102.1
Capital at 5%	683	678	100.7
Labor Income	1,407	1,367	102.9

Land Tenure

In the 63 farms were included 4200 acres of which 3300 or 76.7% were operated by the owners. Thirty five farmers owned all the land and eighteen rented all the land they operated. Ten farmers rented land in addition to what they owned. Four operators purchased land during the five years, three of them taking the step from tenant to owner.

Nearly all the rented land carried a share contract. There was a wide range in the terms of the contract, varying with the bargaining ability of the parties contracting, with the efficiency of the tenant, and with the desirability of the land offered for truck farming. There is a marked preference for dividing the proceeds equally between land-lord and tenant. Supplies, machinery and work stock used in production are divided between the two or are furnished by the one or the other in such a way as may appear to make the division a fair one. Usually the cost of the packages is shared on the same basis as the proceeds. Some landlords have attempted to pay all the package costs but a year with high yields and low prices has been usually followed by changed contract. Most landlords pay all expense for fertilizer and cover crop seeds. Vegetable seed costs are usually divided, the tenant growing the plants. Machinery and equipment including tomato stakes and some times the work stock is owned by the landlord. If the tenant furnishes the work stock the landlord furnishes the roughage. The tenant often keeps a cow, chickens or pig, occasionaly growing a part of the feed for them on the farm. When single fields only are rented the landlord usually furnishes the fertilizer and a large part of the plants, or for crops with a high labor requirement such as tomatoes the tenant may get three-fifths of the proceeds.

Table IV. The Use of Land, Marietta Truck Section, 1920 to 1924 and five year average, Acres per Farm.

Use of Land	Acres per Farm					
	1920	1921	1922	1923	1924	Average
Total acres per farm	68.7	69.6	70.3	66.5	66.5	68.4
Waste land	4.4	4.4	4.4	4.3	4.3	4.4
Wood land	7.2	7.2	7.2	5.6	5.7	6.6
Pasture land	26.0	26.8	29.0	28.2	28.4	27.7
Untillable	17.7	17.7	19.6	17.3	17.2	17.9
Tillable	8.3	9.1	9.1	10.9	11.1	9.9
Orchard	1.6	1.6	1.6	1.6	1.5	1.6
Bearing	.6	.5	.5	.5	.5	.5
Not bearing	1.0	1.1	1.1	1.1	1.0	1.0
Crop Land	29.5	29.6	28.1	26.8	26.8	28.1
Field crops	22.4	22.5	20.6	19.3	18.7	20.6
Hay	9.4	9.7	10.4	8.6	8.6	9.4
Soy bean hay	.3	.6	.6	.9	1.1	.7
Corn	8.0	7.1	5.9	6.3	6.3	6.7
Grain	6.7	6.0	4.7	5.2	5.2	5.4
Silage	1.3	1.1	1.2	1.1	1.1	1.2
Wheat	4.0	4.2	3.0	3.3	2.7	3.4
Oats	1.0	.6	.5	.5	.4	.6
Soy bean seed	.0	.4	.4	.5	.4	.3
Other field crops	.0	.5	.4	.1	.3	.2
Truck crops	7.1	7.1	7.5	7.5	8.1	7.5
Tomatoes	2.1	2.0	2.3	2.0	2.2	2.1
Cabbage	1.8	1.7	2.1	2.2	2.5	2.1
Sweet corn	1.1	1.3	1.4	1.2	1.4	1.3
Cucumbers	.3	.1	.2	.2	.3	.2
Potatoes	1.3	1.6	1.0	1.2	1.2	1.3
Other Truck Crops	.5	.4	.5	.7	.5	.5

Table V. The Use of Land, 12 Hill Farms, in Acres per Farm, Five Years and Average.

Use of Land	1920	1921	1922	1923	1924	Average
Acres per farm	124.5	124.7	133.2	128.3	127.3	127.6
Waste land	11.6	11.6	11.7	11.7	11.7	11.7
Woodland	16.2	16.5	16.5	15.0	15.2	15.9
Pastureland	42.7	49.0	56.6	53.3	51.6	50.6
Untillable	29.2	28.7	34.4	31.6	29.7	30.7
Tillable	13.5	20.3	22.2	21.7	21.9	19.9
Orchard	2.2	2.0	1.9	1.9	1.8	1.9
Bearing	1.9	1.8	1.7	1.7	1.6	1.7
Not bearing	.3	.2	.2	.2	.2	.2
Crops	49.5	46.0	46.6	46.1	45.0	46.7
Field Crops	46.5	43.5	43.4	42.8	41.7	43.6
Hay	19.4	17.5	20.5	18.0	20.7	19.2
Corn	11.7	12.2	10.3	11.4	10.6	11.2
Grain	10.0	11.1	9.1	10.1	9.2	9.9
Silage	1.7	1.1	1.2	1.3	1.4	1.3
Wheat	12.5	11.6	10.4	10.7	8.8	10.8
Oats	2.9	1.4	2.2	2.5	1.6	2.1
Other crops	0.	0.	0.	.1	.0	.0
Truck Crops	3.0	2.5	3.2	3.3	3.3	3.1
Tomatoes	1.6	1.4	1.5	1.5	1.5	1.5
Cabbage	.5	.4	.6	.7	.6	.5
Sweet Corn	.1	.1	.2	.1	.3	.2
Cukes	.1	.0	.1	.1	.1	.1
Potatoes	.7	.5	.7	.9	.7	.7
Other Truck	.0	.1	.1	.0	.1	.1

Land Utilization.

Sixty per cent of the land in the 63 farms is tillable. Of the 2500 acres which are tillable, 2000 are cultivated, in either crops or orchards. Approximately 40 per cent of the lant is in pasture, 10 per cent in wood and 5 per cent is classified as waste land. Three-fourths of the cultivated area is in farm crops and the balance is used for the production of truck crops. Table V.

Practically all of the wood land and waste land is on the hilly section of the district. One half of such land is part of the 12 hill farms which constitute 30 per cent of the area covered in the survey. During the five years seven farmers sold some wood, post, or other timber. The woodland and waste land on these seven farms amounted to about ten acres per farm. Sales of woodland products during the five years totaled $1225.

Of the 1750 acres of pasture land about 500 are tillable. There is a wide range in the area of pasture per farm. A few of the farms consisting mainly of soils generally considered most valuable for truck growing had almost no pasture land. Some of the truck growers with sandy or gravelly soils for truck crops have hill land for pasture. On the 63 farms there was approximately 650 livestock units or the equivalent of 650 mature cows or horses. Part of the livestock was not pastured or pastured only part of the time. The carrying capacity of the pasture averaged about three and a half acres to the animal unit.

For two years of the five hay comprised one half of the field crop acreage. Hay was produced on nearly every truck farm regardless of the acreage of other field crops. The acreage of corn for silage and grain was about two-thirds that of hay. The acreage of all other field crops which consisted mainly of wheat and oats was only about half that of the hay acreage. There was a marked increase in the acreage of soy beans during the five years.

Starting with a half acre per farm the acreage increased to an acre and a half per farm at the end of the five year period. The soy bean acreage was confined almost entirely to the 51 valley farms. Though in some sections soy beans are generally grown on hill land. The increase in the acreage of soy beans for hay was gradual from the first year to the last. For the last year of the survey, 1924, 22 per cent of the entire hay acreage was soy bean. The acreage of soy beans for seed was about the same after the first year. The soybean seed acreage represented for the most part a large acreage on a few farms. The acreage of oats decreased. A few farm operators seeded several acres of sweet clover with wheat some years obtaining a fair yield of hay in the fall.

Only 10 per cent of the total was devoted to truck crops but that 10 per cent was important because from that 80 per cent of the receipts were obtained. The two truck crops, cabbage and tomatoes, comprised a half of the total truck acreage and averaged about two acres each per farm. Potatoes and sweet corn were of nearly equal acreage and constituted about one-third of the total land in truck crops. Cucumbers, peppers and all other truck crops combined were grown on a smaller acreage than either sweet corn or potatoes.

The use of the cultivated land varied during the five years, depending on price, price prospects and convenience of farm organization. The acreage of field crops was decreased. Most of the decrease was in wheat on the hill farms and corn on the valley land. The acreage of truck crops was increased. Most of the increase was in the acreage of cabbage. Sweet corn ranked second in increased acreage. A considerable part of the total increase in the acreage of cabbage throughout the district was that represented by the 63 growers. In fact on the 63 farms at the close of five year period the acreage of cabbage for the group exceeded that of tomatoes which was but little

more than maintained. For the district as a whole the acreage of tomatoes was materially extended and exceeded that of cabbage. The acreage of potatoes decreased slightly.

Livestock.

There was an average of seven and a half productive livestock units per farm. Two thirds of the livestock were cattle and one sixth each hogs and poultry. Sheep were kept on but five farms. The acreage of farm crops amounted to only two for each productive livestock unit, consequently much feed was purchased. The total amount expended for feed was 50 per cent greater than that secured from the sale of farm crops. During the five years there was some shifting in the kind of livestock and on the whole a decrease in the amount.

There was a decrease in the amount of work stock during the five years. The average was $2\frac{1}{2}$ head per farm or the equivalent of one horse to each seven acres of crops.

Farm Production and Receipts.

The receipts from the sale of truck crops average 80 per cent of all receipts and varied from 76 per cent to 83 per cent. Table VI. The sale of livestock and livestock products ranked second in importance and formed from 10 per cent to 15 per cent of all receipts. The sale of farm crops was the largest single item of all other receipts which together were of less importance than the livestock enterprises.

Truck Crops.

The two truck crops, cabbage and tomatoes form the basis for the trucking industry in this section. Table VII. Their fortunate supplementary labor and equipment requirement together with their extended marketing season provides an efficient utilization of the factors of production. Cabbage plants are started early in the season, usually by mid winter, and are

Table VI. Farm Receipts.

Item	Year beginning October 1st					
	Average	1920	1921	1922	1923	1924
Receipts, Total	$ 3102	$3810	$2569	$2269	$3338	$3525
Truck Crops	2430	2963	2090	1711	2584	2800
Tomatoes	1237	1499	1044	808	1242	1591
Cabbage	790	1055	668	613	915	701
Sweet Corn	125	135	108	93	133	157
Potatoes	130	174	125	81	144	124
Cucumbers	44	48	36	25	46	66
Other Truck Crops	104	53	109	90	106	161
Field Crops	98	138	80	87	95	97
Livestock and Products	439	543	298	364	511	483
Cattle	49	178	39	81	119	80
Dairy Products	169	168	155	132	184	204
Hogs	33	63	11	26	43	21
Sheep	4	7	- 6	6	11	1
Wool	10	10	9	11	12	10
Poultry	28	23	13	28	43	31
Eggs, Number doz.	274	213	216	231	326	383
Value	91	89	73	74	93	129
Sales per 100 hens	148	154	136	124	147	178
Other	5	5	4	6	6	7
Fruit	31	66	7	19	15	50
Labor off the farm	49	20	47	64	56	55
Woodlot products	4	1	1	4	12	2
Machine Rental	10	19	10	2	11	7
Building and land rental	5	4	4	3	8	4
Sale of plants	7	7	5	5	8	12
Other receipts	10	7	14	10	7	12
Increase feed inventories	15	41			31	3
	Relative importance of Receipts.					
Receipts Total, per cent	100	100	100	100	100	100
Truck Crops	80	78	83	76	79	80
Livestock and products	13	14	10	15	14	13
Farm Crops	3	4	3	4	3	3
Fruit	1	2	0	1	1	1
Other	3	2	4	4	3	3
Truck Crops, Total	100	100	100	100	100	100
Tomatoes	51	51	50	47	48	57
Cabbage	33	36	32	36	35	25
Sweet Corn	5	4	5	6	5	6
Potatoes	5	6	6	5	6	4
Cucumbers	2	1	2	1	2	2
Other truck crops	4	2	5	5	4	6

Table VII. Truck Crop Production and Sales.

Item	Year beginning October 1st. 1920	1921	1922	1923	1924	Average
	Yields per Acre					
Tomatoes, baskets	681	546	586	614	797	637
Cabbage, crates	183	182	208	216	200	198
Sweet Corn, hampers	79	59	67	97	69	73
Potatoes, bushels	122	87	121	135	130	119
Cucumbers, hampers	119	225	154	237	155	178
Unweighted Average	98	90	94	107	111	
	Production per farm.					
Tomatoes, baskets	1383	1117	1363	1235	1745	1369
Cabbage, crates	321	304	460	466	501	410
Sweet Corn, hampers	83	75	94	114	83	90
Potatoes, bushels	157	139	123	165	155	148
Cucumbers, hampers	41	29	34	38	39	36
	Average Seasons Price.					
Tomatoes, basket	$1.08	$ .95	$ .51	$1.01	$ .91	$ .89
Cabbage, crate	3.29	2.20	1.38	1.93	1.40	2.04
Sweet Corn, hamper	1.61	1.43	1.02	1.16	1.89	1.42
Potatoes, bushel	1.60	1.30	.91	1.19	.90	1.18
Cukes, hamper	1.17	1.27	.71	1.10	1.71	1.19
Unweighted average	1.75	1.43	.91	1.28	1.36	1.34
	Value per Acre.					
Tomatoes	$735	$519	$299	$620	$725	$580
Cabbage	602	400	287	417	280	397
Sweet Corn	127	84	68	113	112	101
Potatoes, sold	174	100	90	140	124	126
Cucumbers	139	286	109	261	265	212
	Package cost per Acre.					
Tomato, baskets	$58	$49	$41	$46	$61	$51
Cabbage, crates	70	64	50	48	47	56
Sweet Corn, hampers	18	12	11	17	10	14
Cuke, hampers	23	40	22	36	23	29
	Value per Acre less Cost of Packages					
Tomatoes	$677	$470	$258	$574	$664	$529
Cabbage	532	336	237	369	233	341
Sweet Corn, hampers	109	72	57	96	102	87
Potatoes	174	100	90	140	124	126
Cucumbers	116	246	87	225	242	183

set in the field as soon as danger from freezing is past, thus giving more room in the hot bed or green house for tomatoes. Again at harvesting time the completion of cabbage harvest marks the beginning of tomato harvest. Cabbage crates are purchased in knocked down form, and nailed during the late winter. Considerable space is required for the storage of the nailed crates but they are used before the space is required for the storage of other crops.

Cabbage thrive best and mature earlier on the open well drained type of soil more commonly found in the valleys. Tomatoes prefer a somewhat heavier soil Better yields have been secured on the hills than in the valleys. Tomatoes, however, have done better on the sandy and gravely soils than cabbage on the hill soil. The more successful production of the two crops on the valley soils together with the convenience of the farm layout are important factors in land values.

Potatoes, sweet corn and cucumbers rank next to tomatoes and cabbage in order of their importance. Other crops include peppers, egg plant, sweet potatoes, spinach, endive, lettuce, string beans, rhubarb and asparagus. Only about 60% of the potatoes grown were sold. But a small proportion was sold through the Association. Sweet corn was grown more extensively in the Rockland section than in the other parts of the district. Cucumbers were formerly more extensively grown than at present. The crop represents a type not well established in the district. The acreage varies radically with the price. On farms where a uniform acreage was grown, fairly satisfactory returns were received. Peppers have gradually increased in acreage but still rank below cucumbers.

Practically all crops except potatoes were sold through the co-operative marketing association. The price, therefore, represents the gross selling price less the selling costs, commission, freight, drayage,

icing, etc. Farm receipts from the sale of truck crops include cost of packing, packages and transportation to the shipping point. The vegetables are all graded and packed on the farm by the grower.

Tomatoes are packed in 20 pound climax baskets, cabbage in 100 pound crates and sweet corn in bushel and half hampers holding about 55 pounds. Cucumbers were packed in bushel hampers prior to 1927 but are now packed in bushel baskets. All crops except sweet corn are graded into three well defined grades known as fancy, choice, and special. The lower grades are sold only so long as the price justifies their shipment. Prices used in this discussion unless otherwise stated are the average for all grades sold.

There was much variation in the factors which made up the receipts from truck crops. The yield of cabbage varied less than that of tomatoes and other truck crops, though the total production per farm and the price of cabbage varied more than that of tomatoes. There was but little difference in the variation of total receipts from the various truck crops during the five years. The year of the greatest receipts from tomatoes was the year of more than average acreage, high yields and average price. The maximum cabbage receipts was the result of an unusually high price. The year of lowest receipts for both crops was a year of low prices and with both acreage and yield average or above. For only one of the five years was there a compromising variation in the receipts for the more important crops. For two years the receipts from nearly all crops were low, for one year high and for one year near average. The diversity of truck crop receipts for the five years was not an important factor in stabilizing income.

Livestock Production and Receipts.

Farms differed widely in their dependence on livestock enterprises for farm income. Livestock were kept on some farms only to supply the

family table. On other farms livestock receipts formed an important part of all receipts. More attention was being given to livestock production at the close of the five year period than at the beginning. Several factors were undoubtedly of importance in the shift in production. Livestock receipts, while more quickly and more seriously affected in the deflation of farm prices, recovered more rapidly than truck crop prices so that in 1922 when receipts from truck crops were lowest receipts from livestock represented a larger proportion of the total. The unsatisfactory truck crop prices of 1922 were undoubtedly the result of a too rapid extension of the truck crop industry. Increased livestock production served to increase the size of the farm business on many farms, and thus to increase the possibility of a better income without increasing the production of vegetables. At the same time that livestock prices were improving production costs were being reduced through production records with more careful selection and improved farm practices as the result of recent agricultural research and extension. Still another factor was that the by-product of the livestock industry, manure, is considered of much importance in the production of early vegetables. The supply from nearby cities and villages had been gradually decreasing. Some growers had manure shipped in from other places at a cost of $4.00 or more a ton. Growers were, therefore, justified in crediting the livestock enterprises with more than the usual allowance for manure.

Receipts from Cattle and Dairy Products.

There were approximately four cows and three young cattle on each farm. One third of the cattle were of the beef or general purpose type, Herefords predominating. Two thirds were of the dairy type with Jerseys predominating.

The receipts from dairy products increased during the five years. The sale of whole milk increased $35.00 per farm as a result of several farmers selling small quantities at retail. The average sale of butter and butter fat increased from 167 to 216 pounds. But the net decrease in price was from 48.4 to 39.1¢ per pound, so that the increase in receipts was but from $81.00 to $84.00 per farm.

Poultry and Eggs.

The average size of the farm flocks increased almost 30% during the five years or from 70 to 90. The number of flocks of 50 hens or less decreased from 34 to 25 and the number of growers with receipts of $100.00 or more from the flock increased from 15 to 30. Average receipts increased from $92.00 to $163.00 per farm.

Other Livestock.

Nearly every farmer fattened one or more hogs for the meat supply of the family. The 63 farms averaged five head of hogs each year. Only a few of the farmers kept a brood sow every year. Most of the sales were of pigs.

Five farmers kept sheep. The sale of wool contributed most toward the income from the flock. That the flocks were not given consistent care is evident from the fact that no farm operator raised lambs every year. Seasons in which lambs were sold the flocks were more profitable. Spring lambs were produced on one farm. The lambs were dropped in December and sold in April or May at a weight of 50 pounds. The sale of lambs averaged $7.00 and that of wool $3.00 per ewe.

A true perspective of the livestock industry in the district is possible only when the farm consumption is taken into consideration. Livestock production was much more efficient than sales alone would indicate. The value of the meat and livestock products consumed on the farms in 1924

Table VIII. Farm Products Consumed on the Farm.
Marietta Truck Section, 63 farms, 1924.

Item	Amount	Value
Whole milk	1526 lbs	$61
Skim milk	512 "	10
Cream	253 "	32
Butter	117 "	47
Eggs	122 doz.	36
Poultry	117 lbs.	23
Pork	432 "	43
Beef	91 "	10
Other meat	2	1
Potatoes	33 Bu.	31
Cabbage	374 lbs.	7
Sweet Corn	47 doz. ears	9
Green beans	17 Gal.	5
Tomatoes	9 Bu.	9
Other vegetables		22
Apples	17 Bu.	12
Pears	1 "	1
Peaches	4 "	4
Cherries	44 Qt.	5
Berries	37 "	4
Other fruit		5
Wheat	9 Bu.	9
Corn	1 "	1
Sorghum and honey		3
Wood	7 cords	14
House rent		152
Total		559
SUMMARY		
Livestock products		186
Meat		79
Vegetables		84
Fruit		31
Grain		10
Other		3
Fuel		14
House rental		152

amounted to 60 per cent of the five year average receipts from livestock. The fact explains the rapid increase in livestock receipts since it is probable that increased production was not accompanied by increased farm consumption. In this connection it is of interest to note that several farm operators increased their farm income and materially improved their rank through increased livestock production. (An increase in amount and quality of their livestock.)

Other Farm receipts.

Receipts other than those mentioned made up three per cent of all receipts, and amounted to $85.00 per farm. Labor off the farm was the source of more than half such receipts and increased as truck farm receipts decreased. Woodlot products were sold from a few farms and consisted of post, mine timber and lumber. A few growers obtained some income from selling vegetable plants and seeds produced on the farm.

Capital.

The amount of capital invested on the 63 farms ranged from about $2000 to $45,000 with an average of $13,425. There were three rather

Table IX. Farm Capital.

Item	1920	1921	1922	1923	1924	Average	Percent of Total
Total Capital	$13,650	$13,859	$13,483	$13,114	$13,019	$13,425	100
Real estate	11,259	11,358	11,313	11,055	11,006	11,198	83.4
Land	7,814	7,943	7,635	7,540	7,357	7,658	57.0
Buildings	3,445	3,415	3,678	3,515	3,649	3,540	26.4
House	1,949	2,027	2,039	1,901	2,080	1,999	14.9
Other house	300	162	262	269	276	254	1.9
Green house	9	10	109	102	96	65	.5
Other buildings	1,187	1,216	1,268	1,243	1,197	1,222	9.1
Livestock	852	878	751	726	735	788	5.8
Machinery and tools	635	696	689	664	610	659	4.9
Tomato Stakes	213	203	190	178	162	189	1.4
Hot bed sash	95	95	89	82	75	87	.7
Feed and supplies	596	633	451	409	431	504	3.8

distinct size groups. Most of the farms had $10,000 or less of capital with the modal group at $7,000. There were also several farms with $12,000 and another group with $20,000 capital There were but three farms with more than $25,000 capital.

There was much variation in the distribution of capital on the 63 farms. As an average nearly 60 per cent of the capital was invested in land, 26 per cent in buildings, a total of 83 per cent in real estate. More than half the investment in buildings was in the dwelling. The investment in barns and other out buildings is relatively small. Less than 6 per cent of the investment was in livestock. Seven per cent of the total capital was invested in equipment, two per cent of which was represented by sash and stakes, or special equipment for truck crop production.

EXPENSES

Expense for the five years averaged $1637. Labor was by far the most important item of expense and including unpaid family labor comprised 32.1 per cent of all expense. Package cost formed 14.8 per cent, feed 9.2 per cent, taxes 8.3 per cent, fertilizers 6.4 per cent, machinery and equipment depreciation and repairs 6.3 per cent and building depreciation and repairs 6.1 per cent of all expense. The seven items made up 83 per cent of the total.

Table X. Expense by Years, 63 farms, 1920 - 1924.

Item	Per cent of Total	Average	1920	1921	1922	1923	1924
Labor, Months, Total	100	10.2	12.0	10.1	9.0	9.5	10.4
Regular	71	7.2	6.6	7.6	7.2	6.6	7.2
Extra	11	1.1	2.0	.8	.5	1.3	.9
Family	18	1.9	3.4	1.7	1.3	1.6	1.6
Expense, Total	100	$1637	$1720	$1666	$1497	$1598	$1705
Labor, Total	32.1	525	635	493	425	508	567
Regular	22.9	375	372	374	340	351	436
Extra	4.0	66	123	45	30	73	57
Family	5.2	85	149	74	55	84	73
Permanent Improvement, Repair, and Depreciation, Total	6.6	108	110	103	107	109	108
House repair	.8	12	8	17	7	17	13
Depreciation	2.6	42	44	40	43	41	43
Other Buildings, repair	.5	8	8	6	13	7	5
Depreciation							
Tenant house	.3	5	6	3	4	5	5
Green house	.4	6	6	6	7	6	6
Other buildings	1.6	27	30	26	27	25	25
Fence Repair	.4	8	8	5	6	8	11
Equipment, Repair and Depreciation, Total	9.8	161	143	184	161	164	160
Machinery, Repair	1.6	26	32	25	19	26	29
Depreciation	4.7	78	73	81	87	81	73
Stake depreciation	.9	14	17	15	14	13	12
Sash "	.8	13	15	14	13	12	11
Decrease Work Stock	1.8	30	6	49	28	32	35
Fuel and Oil	1.2	19	14	17	18	20	26
Feed							
Hay	2.4	39	67	23	29	35	42
Concentrates	6.8	111	106	89	83	139	140
Decreased Inventories	2.7			182	38		
Straw	.2	4	4	5	3	4	5
Seeds and plants	3.4	55	58	48	52	55	55
Fertilizers	6.4	105	138	93	93	99	101
Twine	.6	10	16	9	8	9	8

Table X. Expense by Years, 63 Farms, 1920 - 1924.
(Concluded)

Item	Per cent of Total	Average	1920	1921	1922	1923	1924
Packages	14.8	243	272	224	226	221	271
Tomato baskets, hundred		8	8.5	9	7	7.5	7.7
Cabbage, crates, hundred		29	38	35	24	22	23.6
Corn Hampers, hundred		19	22	21	17	18	17
Cucumber hampers, hundred		16	19	18	14	15	15
Packages	6.7	$108	$118	$101	$ 96	$ 93	$134
Tomato baskets							
Cabbage crates	6.9	112	124	104	110	103	118
Sweet corn hampers	1.0	17	18	16	16	21	14
Cucumber hampers	.4	6	8	5	5	6	6
Insurance	.8	13	15	12	10	10	16
Taxes	8.3	136	99	122	146	158	154
Other Expenses	3.9	64	39	60	101	69	53

The total expenditure in the operation of the 63 farms during the five years varied from $1497 to $1705. Much of the variation is explained by the changing price level. The inflation of prices during and following the World War and the subsequent deflation in agricultural prices were both direct and indirect factors in the variation.

The various items of cost differed in their response to the factors which were of importance in the changing price level. Fertilizer prices reached their peak in 1920. Nitrate and potash carriers had decreased in price before that time and phosphates were forced down before the 1921 season was far advanced by the inability of grain farmers to purchase at the higher price. Package prices did not pass their peak until 1921. Feed costs varied much with the prices of farm crops. Taxes lagged during the inflation period. They were lowest in 1920 when they formed 5.7% of all expense and highest in 1923 at 9.9% of the total.

The indirect effect of the deflation was apparent as unpromising price prospects. The 1920 season was the climax of a series of years of increasing prices. As a result labor was employed freely, fertilizers were applied generously and much feed was purchased. Following the unprecedented decline in the prices of farm crops and livestock at the close of the 1920 season there was much uncertainty as to the prices that might prevail for the 1921 truck crop season. Accordingly not only was less outlay made for field crop production but less effort was also put into truck crop production. The reduction took place not so much by reduced acreage as by the employment of less labor, the purchase of less commercial fertilizer and the practical elimination of limestone and manure from the list of supplies. Accordingly production was decreased and prices while not in proportion to the supply were apparently better than expected and returns for the effort put into truck crop production were better than for any other enterprise. With the confidence in the market for truck crops somewhat restored the crop acreage was extended, more fertilizer was purchased and with favorable climatic conditions a total production resulted that was 20 per cent more than for any previous year. As a result prices were low and receipts discouraging. But unfavorable marketing seasons had been experienced before so that while acreage was not extended it was not reduced. More fertilizer was purchased and with the satisfactory progress of the season more labor was employed. The results were gratifying and for the 1924 season acreages were extended, the purchase of fertilizer was increased and manure and limestone were again purchased in quantities.

Part of the variation in expense was due to improved production practices and better equipment. Numerous growers made a statement to the effect that they had doubled the application of fertilizers on truck crops during the five years. Expenditure for feeds increased after the second

year with the growing importance of livestock in the farm organization. The purchased feed was more largely high protein concentrates and less hay and roughage. The item "gas and oil" increased from $14 to $26 per farm during the five years as the average investment in workstock decreased from $307 to $218 and the number of tractors increased from 3 to 10 and trucks from 8 to 14.

The details of package costs during the five years show interesting variations. Cabbage crates cost more than indicated since they require more labor than other packages in addition to the cost indicated. Tomato baskets cost more and cabbage crates least per pound of product sold but because of relative average prices a larger proportion of the cabbage crop is required to pay for the package than for the other more commonly grown truck crops. In seasons of low truck crop prices package costs were a much larger deduction from total receipts than for seasons of favorable prices. For individual crop/years package costs have varied from 7.4 per cent to almost 20 per cent of gross receipts. Another phase of the package costs is that incident to hold-overs. Packages are much more advantageously purchased and more conveniently handled when purchased even in advance of the planting season. The uncertainty of crop yields to say nothing of the factors which may cause the acreage to vary renders the purchase of the required number of packages extremely uncertain.

Increase in Labor Efficiency.

There was a marked improvement in the efficiency with which labor was used during the five years. As prices declined rapidly and continued uncertain it was necessary to reduce costs if the operator was to find a credit balance in his favor at the close of the year. Labor employed, including the operators labor, family and hired labor was the largest item of input and, therefore, offered an opportunity for reducing costs. The data presented in table XI show a definite increase in the number of packages marketed for each month of labor. The production in number of packages for each unit of labor is affected somewhat by crop yields. Another indication of labor efficiency is that of crop acreage for each unit of labor. The average acreage of truck crops for each farm each of the five years is as follows:

1920	7.1 acres
1921	7.1 "
1922	7.4 "
1923	7.5 "
1924	8.0 "

The labor employed reduced to years is as follows:

1920	2.0 years
1921	1.9 "
1922	1.8 "
1923	1.8 "
1924	1.9 "

The acreage of truck crops for each 12 months of labor was as follows:

1920	3.55 Acres
1921	3.74 "
1922	4.11 "
1923	4.19 "
1924	4.21 "

Factors which contributed to the increased efficiency of labor included better management, increased skill, an improvement in the distribution of labor throughout the trucking season by increasing the acreage of non-competitive crops and by the increase of motor power, more tractors and trucks.

Table XI. Production of truck crops in number of packages per farm and per month of labor expended on 63 farms in Marietta Truck Section.

	1920	1921	1922	1923	1924
Number of packages per farm	1985	1665	2075	2020	2525
Months of labor expended	24.0	22.1	21.0	21.5	22.4
Packages per month of labor	83.	75.	99.	94.	113

Successful and Unsuccessful farms.

The details of organization and farm practices which are associated with the more successful farms are apparent from a comparison of groups of farms operated under practically the same conditions yet with varying degrees of success. Varying natural conditions throughout the district require different types of organization. Production in the valleys with light open soils making an intensive system of truck crop production possible may be represented by the group of farms in the Devol's Dam section. The group of farms with a more diversified production is represented by those farms included in the survey which are located on the hill lands and which have none other than clay soil on which to grow truck crops.

In the Devol's Dam section eighteen farms lie within an area that might be inscribed by a circle less than three miles in diameter. The income of this group of farms within so small an area varies from less than enough to pay five per cent interest on the investment to seven dollars a day for the operators labor and skill in management. The less successfully operated farms lie adjacent to or alternation with their more successful neighbors, so that there is a remarkable degree of similiarity in many of the conditions under which production is being carried on. With the same type of soil with uniform natural fertility, the same distance from market,

with a similar amount of capital invested, the skill of the operator was the varying essential of importance in the production.

The average labor income of the 9 more successful farms for the five years was $1896. The range of eight of the farms was from $1300.00 to $2300.00. The labor income of the less successful farms ranged from minus $252.00 to $972.00 with an average of $368.00. These same farmers paid to their hired help $625.00 for 11 months. labor.

The eighteen farms were all specialized truck farms, with 85 per cent of the receipts from the sale of truck crops. From only one of the more successful and two of the less successful farms did the receipts from livestock exceed 16 per cent of the total receipts. The receipts from the sale of farm crops and from unclassified sources did not materially exceed 2 per cent each.

There was a like degree of diversity for both groups of farms, with diversity measured by the number of receipts over $200. There were three farms in each group with as many as six or seven enterprises each of which returned $200.00 to the farm income. Another third of the farms in each group had three or four sources of income each worth $200 or more. There were also three farms in each group that had only two or three enterprises which added $200 or more to the farm income.

The more successful group of farms had more capital than the less successful farms by half. The former group valued their land higher and also had more capital invested as working capital. However, there seemed to be no close relation between the amount of capital invested and the labor income. Nearly half the farms in the group with the larger income had an investment little if any larger than the average of the other group.

Table XII. Farm Business Summary, 9 Successful and 9 Unsuccessful Valley Farms, Marietta Truck Section, Five Year Average 1920 to 1924.

Item	Five year average for Successful Farms	Five year average for Unsuccessful Farms
Acres, Total per farm	59.3	64.5
Woodland	20.0	7.0
Wasteland	2.4	3.8
Pasture	27.8	28.9
Cultivated	27.1	24.8
Corn	4.6	4.1
Corn for silage	1.6	1.1
Hay	7.8	8.4
Other field crops	2.0	2.2
Potatoes	1.8	1.2
Sweet Corn	2.0	1.7
Cucumbers	.2	.3
Tomatoes	3.8	2.3
Cabbage	4.1	2.6
Other truck crops	.7	.8
Yield per acre		
Corn, bushels	62	47
Hay, tons	1.7	1.5
Potatoes sold, bushels	116	93
Sweet corn, 1½ bushel hampers	78	74
Tomatoes, 20 pound baskets	708	506
Cabbage, 100 pound crates	243	190
Livestock		
Beef cattle and young stock	4.5	.6
Dairy cows	2.2	3.4
Brood sows	.8	.6
Other hogs	2.4	2.5
Poultry	79	101
Horses	2.6	3.0
Farm Capital *	$22,563	$16,005
Real Estate	19,594	13,563
Livestock	1,085	688
Machinery	856	961
Sash, covers and stakes	386	307
Inventory, feed and supplies	652	486
Receipts	5,679	2,945
Farm crops	115	46
Truck crops	5,103	2,427
Tomatoes	2,547	992
Cabbage	1,978	879
Sweet corn	215	183

Table XII. Farm Business Summary, 9 Successful and 9 Unsuccessful Valley Farms, Marietta Truck Section, Five Year Average 1920 to 1924. (Concluded)

Item	Five year average for Successful Farms	Five year average for Unsuccessful Farms
Cucumbers	$ 65	$ 61
Potatoes	212	124
Other truck crops	86	188
Livestock and products	298	419
Cattle sales	180	59
Hogs	10	40
Poultry.	5	40
Dairy products	53	120
Eggs	50	160
Increase in Inventories	39	16
Other receipts	119	32
Expense	2675	1778
Labor	955	625
Machinery, repair, and depreciation	143	146
Sash, covers, stakes, depreciation	35	27
House repair and depreciation	78	75
Other buildings, repair, and deprec.	87	44
Fence repair	5	8
Hay, purchased	46	28
Concentrates, purchased	109	78
Seeds	68	58
Fertilizers	150	88
Twine	16	10
Fuel and oil	32	25
Packages	512	250
Insurance	19	12
Taxes	240	167
Other expense	87	87
Decrease in inventories	93	50
Farm Income	3003	1167
Capital at 5 per cent	1128	800
Labor Income	1875	367

Note *. There was not so much difference in the capital invested on most of the farms in each group as the average would indicate. The range in the capital of seven of the more successful farms was from $10,000 to $20,000 and for seven of the less successful farms from $10,000 to $19,000. For the less successful group the model farm more closely approximated the numerical average. The capital invested in one of the more successful farms was more than twice that of the numerical average.

The more successful farms were only ten per cent larger on the basis of cultivated acreage. The first year both groups cultivated the same acreage. The less successful group decreased their acreage so that by the close of the five year period there was a difference of 20 per cent in the area cultivated.

Crop yields were better on the more successful farms. The yield of tomatoes averaged 670 baskets per acre for the five years. This yield was more than 50 per cent greater than that of the other group of farms. The average yield of cabbage was 190 and 243 crates, or more than 25 per cent greater on the more successful farms. There was much the same difference in the yield of field crops as well as of other truck crops. However, a few of the farms in the group of more successful farms had crop yields below the average and a few of the less successful farms had crop yields materially above the average.

The more successful growers received some advantage in the form of a better price. The difference approximated 10 per cent. Prices received for tomatoes averaged 95 cents for the more successful growers and 85 cents for the less successful group. The corresponding prices for cabbage were $1.98 and $1.78 for the two groups respectively. The difference in price was at least partly due to earlier maturity. The more successful group shipped from two to five days earlier than the less successful growers. The season of 1921 illustrates the possible advantage in the earlier maturity. Most of the more successful group made their first shipment of tomatoes in June. Two of the less successful growers shipped some tomatoes in June but most of the growers in the group made their first shipment from the 3rd to the 8th of July. The last week in June tomatoes sold at around $2.20 per basket but dropped to $1.60 during the first week in July. Much of the difference in price represents a net gain as a result of more timely attention

to the various details connected with the growing of the crop rather than an additional outlay of capital.

Receipts from livestock were more evenly distributed among the less successful farms, as several of the more successful farms had practically no receipts from livestock. Only five of the twelve more successful farms had receipts from livestock amounting to more than $100 as an average for the five years. Two of the more successful group kept beef cattle but due to the unusually low prices which prevailed during most of the period the enterprise was not profitable. The less successful farms had good returns from their livestock. Their returns for each dollars worth of feed was greater than that of the most successful group as a whole but not quite as much as that part of the group which did not keep beef cattle. Through the trucking section there seemed to be no close relation between the returns from livestock and the total farm income. The degree of success attained in growing and marketing vegetables was the dominating factor in determining farm income. Individual farms realized an important part of their income from livestock and undoubtedly materially increased their net returns from these enterprises. Livestock enterprises served to increase diversification and add materially to the size of the farm business without adding to the oversupply of truck products which at times prevailed.

Horse work was applied more advantageously in the processes of production by the more successful growers. The less successful growers kept 15 per cent more horses per farm and with a decidedly lower crop production. The economy in the use of horse work is more apparent when it is realized that much of the feed on many of the farms is purchased.

The more successful farms utilize labor more efficiently. When compared on the basis of labor units the more successful growers secure an average of 14.4 units of productive labor for each months labor as contrasted

with 12.1 for the less successful farms, a difference of 14 per cent. The labor performed may be compared on the basis of amount of produce marketed. Approximately as much time is required to produce a half crate of cabbage as a basket of tomatoes. The two crops together represent 70 per cent of the effort of the less successful farms and 80 per cent of the effort of the more successful farms. For each month of labor the less successful growers marketed 93 units of the two crops and the more successful 166 units. The acreage cared for on the better paying farms is 14 per cent greater than that on the less successful but the amount of products shipped is 80 per cent greater. The difference in the efficiency of labor seems to be the most significant difference in the productive effort of the two groups of growers.

The more successful farmers gained some advantage from a less variable organization. On every farm there was some variation in the acreage of cabbage and tomatoes, the two more important truck crops. Evidently a variation in the acreage of the two crops meant a variation in the efficient utilization of much of the equipment. The total variation in the acreage of tomatoes on the more successful farms was 58 per cent and for the less successful farms 95 per cent of the average acreage grown. There was more variation in the cabbage acreage than in the tomato acreage. For the two groups the variation was 80 per cent and 130 per cent. of the acreage grown. Poultry was a minor enterprise on all farms but illustrates the relative variation in the organization of the two groups. The laying flock for the more successful farms averaged 72 hens and varied by 90 per cent of the average while the less successful grower's flocks averaged 101 and varied by 140 per cent. The variation undoubtedly reflects in addition to something of an adjustment to market conditions a general uncertainty and lack of confidence in the future.

An opportunity for observing the effect on the labor income when production factors are varied is apparent by various groupings of the 63 farms. In Figure III the distribution of the farms is shown on the basis of the combined acreage of cabbage and tomatoes and labor income. In general an increase of an acre of these two crops has been evidenced by an increase of $180 in the labor income. For an acreage near the average the difference is less but with the farm acreage materially below or above the average the increase was much greater. In Figure IV the distribution of the farms is shown on the basis of average yields for the two crops. A few farms had a high yield and a low labor income and a few of the farms with a small acreage of these two crops have had a labor income at least above the average but the labor income of most of the farms varied with the acreage and yield of the two crops. High yields occur more frequently on farms of decidedly less than average acreage. For these:

13 farms with small crop acreage and low yields the labor income averaged $147;

8 farms with small crop acreage and high yields the labor income averaged $532;

9 farms with average acreage and low yields the labor income averaged $678;

12 farms with average acreage and high crop yields the labor income averaged $865;

9 farms with large crop acreage and less than average yield the labor income averaged $838;

13 farms with large crop acreage and high crop yields the labor income averaged $1555.

Size of business is the important factor in labor income. But the loss on farms of high acreage and low yields was much more serious than on farms of small crop acreages. The farms of medium crop acreages and yields decidedly above the average had a higher average labor income than the group with a large acreage and small yield.

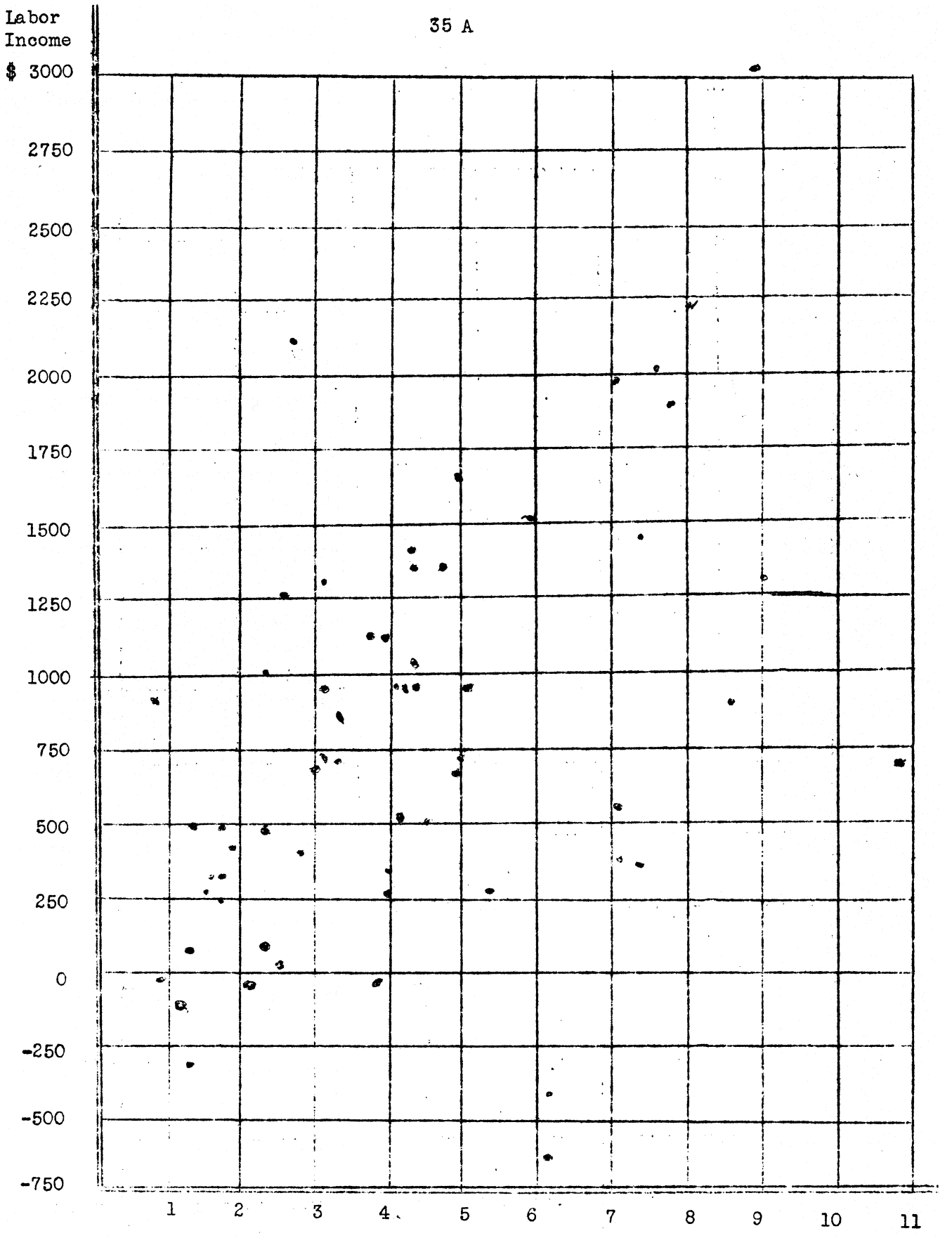

Fig. III.

Five year average acreage tomatoes and cabbage and labor income.

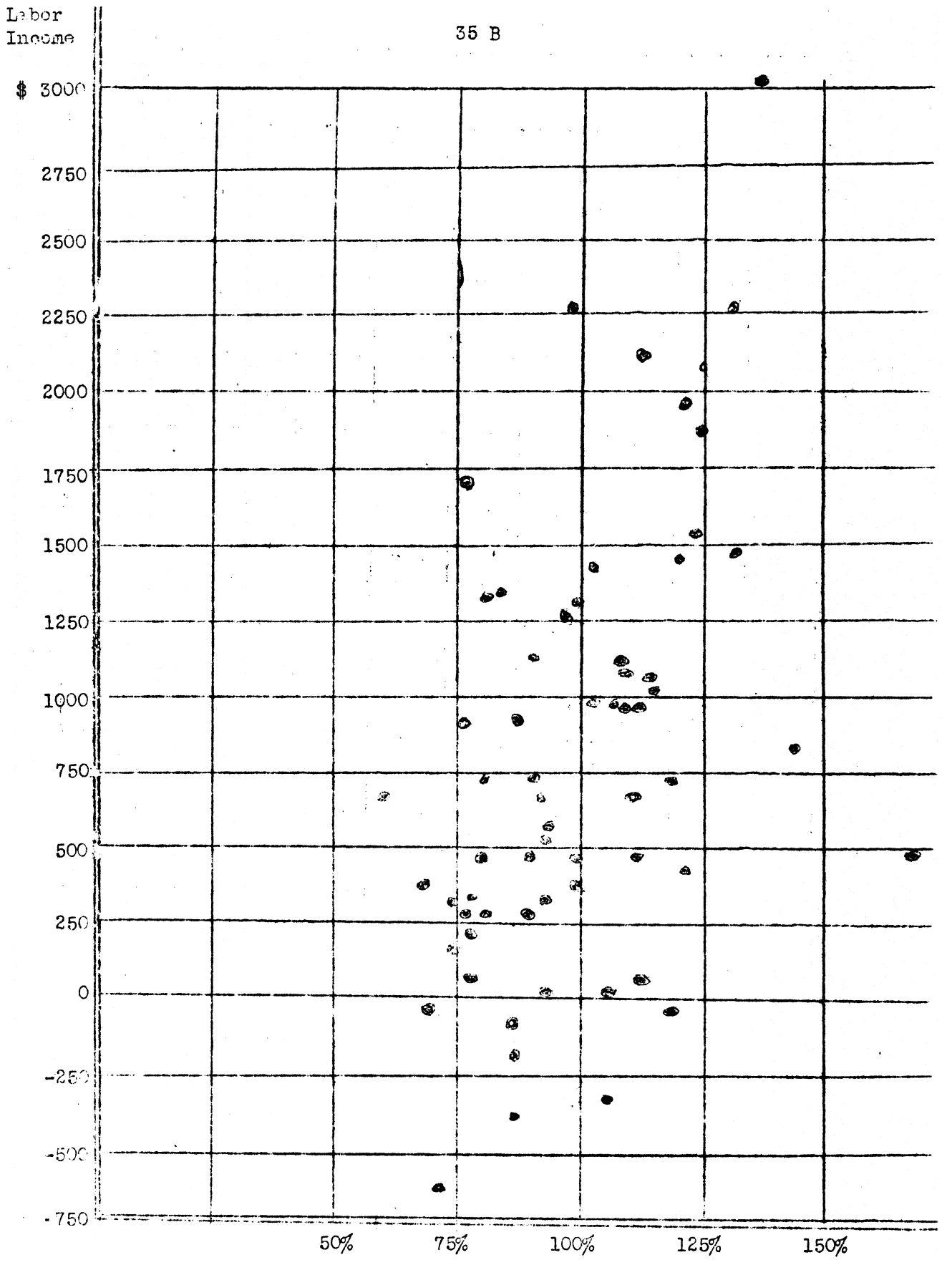

Fig IV.

Percentage of weighted average yields of tomatoes and cabbage and labor income.

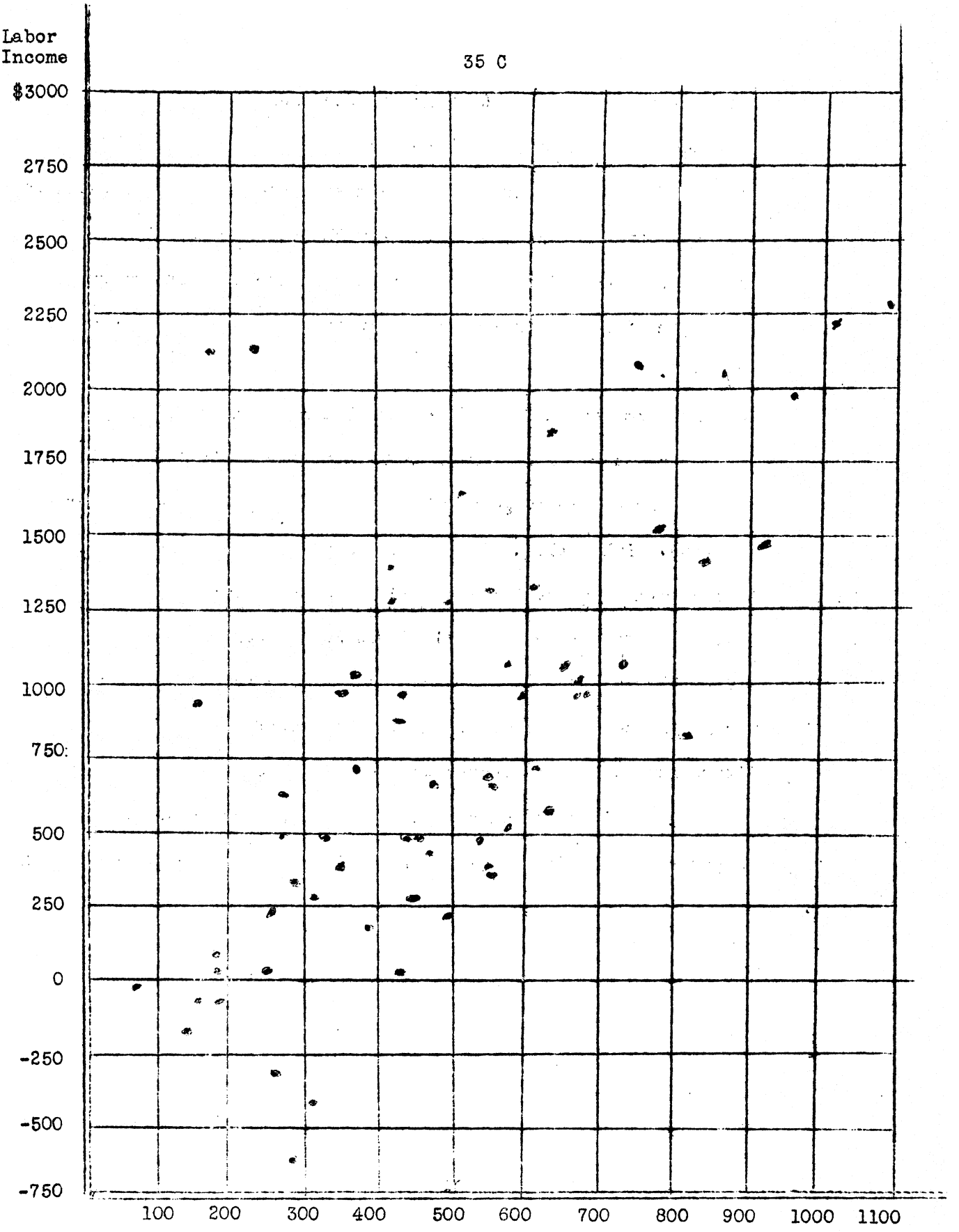

Fig. V.

Average or mean production, in baskets of tomatoes and half crates cabbage per month of labor and labor income.

The distribution of the 63 farms on the basis of the number of packages marketed for each month of labor and the average labor income is shown in Figure V. The chances are almost three to one that the labor income will vary above or below the average with the variation in the number of packages produced. In general there was an increase of almost $10 in the labor income for each unit increase in the average sales per month of labor employed.

For the farms on the hill land with the more diversified type of production the more successful farm managers had more capital and a larger crop acreage, a larger percentage of which was of the more intensive crops corn and tomatoes. Table XIII. Crop yields were much the same except that the larger farms had the better yield of tomatoes and of less importance cabbage. While the difference in capital was 20 per cent and the difference in crop acreage 30 per cent yet the total expense for the larger farms was but 11 per cent greater than that of the less successful farms. However, the expenditure for labor was greater on the less successful farms. The expenditure for fertilizer was also at less advantage for while the fertilizer was as generously applied yields for the better paying crops were much less.

Table XIII. Farm Business Summary, 6 more and 6 less Successful Hill Farms, Marietta Truck Section, Five year average 1920 - 1924.

Item	More Successful Farms	Less Successful Farms
Acres, Total per farm	131	108
Woodland	14	17
Wasteland	11	22
Pasture land	52	28
Cultivated	54	41
Corn	13	7
Silage corn	1	1
Oats	2	2
Wheat	12	10
Hay	21	17
Potatoes	.6	.6
Sweet Corn	.1	.1
Cabbage	.6	.4
Tomatoes	1.7	1.3
Yield per acre		
Corn, bushels	45	44
Oats "	21	24
Wheat "	13	13
Hay, tons	1.2	1.2
Potatoes, bushels	90	80
Cabbage, 100 lb. crates	163	135
Tomatoes, 20# baskets	753	656
Livestock		
Beef cattle and young	4.3	4.1
Milchcows	4.3	4.2
Brood sows	.6	.8
Other hogs	5	5
Poultry	126	90
Horses	3.7	3.4
Farm Capital	$9979	$8145
Real estate	7290	5810
Livestock	1064	899
Machinery	576	600
Sash, covers and stakes	181	144
Feed and supplies	869	692
Receipts	2332	1604
Farm crops	161	127
Wheat	88	82
Corn	50	14
Hay	19	21
Other	4	10

Table XIII. Farm Business Summary, 6 more and 6 less Successful Hill Farms, Marietta Truck Section, Five year average 1920 - 1924. (Concluded)

Item	More Successful Farms	Less Successful Farms
Receipts, (Continued)		
Truck crops	$1352	$858
Tomatoes	1132	714
Cabbage	179	97
Sweet Corn	13	8
Cucumbers	11	13
Potatoes	14	16
Other truck crops	3	10
Fruit	62	75
Livestock and products	621	491
Cattle	140	120
Hogs	81	60
Poultry	30	20
Dairy Products	147	165
Eggs	175	115
Wool	48	12
Increased Inventories	31	26
Other Receipts	105	27
Expense	1223	1130
Labor	474	488
Machinery, repair, depreciation	87	83
Sash and stakes, depreciation	16	12
Building, repair, depreciation	79	82
Fence repair	12	15
Feed purchased		
Hay	13	1
Concentrates	51	50
Seeds	35	20
Fertilizers, lime, etc.	105	80
Twine	9	11
Fuel and oil	6	3
Package	137	94
Insurance	8	6
Taxes	111	91
Decreased Inventories	24	42
Other Expense	56	52
Farm Income	1110	475
Capital at 5 per cent	499	407
Labor income	671	61

The organization of the 12 hill farms included in the survey differed from other hill farms which did not produce truck crops as well as from the more specialized valley farms which had a soil well adapted to a wide variety of such crops. A comparison of the 12 hill farms with those of Palmer Township for the three years 1920 to 1922 and with the group of truck farms in the Devol's Dam terrace will indicate something of the advantages and limitations of each.

The hill farms included in the Marietta Truck Farm business survey had only 70 per cent as large an acreage as the Palmer Township farms. A larger part of the acreage of the Palmer Township farms was classified as waste land but most of the difference was in tillable pasture land. Table XIV. The larger acreage of pasture in Palmer Township was used at an advantage for those farms carried nearly half more livestock, had more than a proportional return from livestock and yet fed less hay and concentrates. The farms nearer to Marietta had a larger acreage devoted to field crops, most of which was corn and wheat and in addition three acres of truck crops per farm.

The organization of the two groups of hill farms was about the same as far as livestock production was concerned. The hill farms in the Marietta section kept fewer sheep and less poultry, realized less from the sale of cattle and more from dairy products. Table XV. It is probable that a larger proportion of the livestock products in the Marietta section was consumed on the farm for the farm consumption of these products was undoubtedly a constant factor. The sale of farm crops was a larger item in the receipts of the Marietta section farms but receipts from labor off the farm was of more importance in Palmer Township especially in 1922 which was the only year that the labor income there exceeded that of the Marietta hill farms.

Nearly all items of expense were higher on the farms nearer Marietta as those farms carried a larger business. More labor was employed.

Table XIV. Summary of the organization of 12 hill farms in the Marietta Truck section and 14 hill farms in Palmer Township, average for three years 1920, 1921 and 1922.

Item	Merietta Section	Palmer Township
Acres per farm, total	123	170
Waste land	12	22
Wood land	12	14
Pasture land	49	88
Untillable	30	36
Tillable	19	49
Crop land, total	50	44
Fruit	2	3
Corn	12	10
Wheat	10	9
Hay	20	20
Other crops	3	2
Truck crops	3	
Tomatoes	1.5	
Cabbage	.5	
Potatoes	.6	
Other truck	.4	
Animal Units, total	11.6	17.1
Cattle	8.5	11.4
Sheep	.8	2.5
Hogs	1.3	1.4
Poultry	1.0	1.4
Capital, total	$9130	$7622
Real estate	6493	5370
Land	2384	3364
House	1498	930
Other buildings	1576	1076
Working Capital	3604	2238
Livestock	1057	1271
Machinery	609	505
Feed and Supplies	845	416
Sash, covers, stakes	170	
Cash to run farm		46

Table XV. Summary of the farm business of 12 hill farms in the Marietta Truck section and 14 hill farms in Palmer Township for three consecutive years, 1920 - 1922.

Item	Marietta Section			Palmer Township		
	1920	1921	1922	1920	1921	1922
Receipts, Total	$2293	$1392	$1453	$1319	$964	$1344
Farm Crops	312	105	174	132	76	91
Livestock	730	322	460	950	686	834
Cattle	125	51	135	279	210	248
Dairy products	187	123	115	123	88	70
Eggs	192	147	108	306	215	200
Wool	20	24	33	84	61	114
Hogs	112	15	50	134	74	98
Other livestock	94	38	19	24	38	104
Truck Crop	1236	948	756			
Other receipts	16	17	63	235	203	419
Expenses, total	1420	1099	1084	817	767	834
Labor	647	425	409	180	185	223
Equipment, repair	42	17	10	4	5	5
Depreciation	80	72	83	38	43	49
Permanent Improvement						
Repair	17	26	32	29	29	29
Depreciation	73	62	59	29	31	31
Feeds purchased	71	51	48	106	88	106
Fertilizer	127	78	85	88	66	56
Packages	118	115	109			
Taxes	79	97	107	99	109	129
Decrease feed and supplies	27	44	38	42		7
Other Expense	139	112	104	202	211	199
Farm Income	873	293	369	502	197	510
Interest on capital	480	452	444	404	378	361
Labor Income	393	-159	-75	98	-181	149
Family living from farm				371	358	378

Repairs and depreciation of permanent improvements and machinery were higher as the investment in these items were greater. Fertilizer expenditure was 40 per cent greater and the cost of packages was more than any single item of expense on the Palmer Township farms except labor. More feed was purchased by the farmers of Palmer township. Taxes there were 15 per cent more though the investment was 15 per cent less. The difference in the tax rate was the result of a larger tax duplicate in the section nearer Marietta which had the advantage of public utilities and industries, located within the taxing district. For the hill farms near Marietta taxes for the three years ranged from 3.4 per cent to 7.4 per cent of all receipts while for Palmer Township from 7.5 per cent to 11.3 per cent of all receipts were required for taxes.

The real estate in the Marietta section was valued higher than that in Palmer Township because of a larger investment in permanent improvements. Table XVI. Less capital was invested in livestock but feed and supplies were inventoried higher. Twenty per cent more machinery was included in the equipment of the farms nearer Marietta and in addition special equipment for the growing of plants and truck crops added 35 per cent to the equipment.

The labor income for the three years on the farms including the production of truck crops in their organization was $100 more than that of the farms in Palmer Township which averaged $66. Both sections were affected seriously by the agricultural depression for the entire three year period. The depression did not affect the more specialized farms in the valley until 1921 though its effect was most serious in 1922. Table XVII. The year of the lowest labor income in the hill section was that of 1921. The labor income for the farms in Palmer Township for the two years previous, 1918 and 1919, was about $650 and averaged $290 for the three years 1912 to

Table XVI. Selected items from the farm business summary of Hill farms and Valley farms in the Marietta Truck section. Five year average, 1920 - 1924.

Item	Hill Farms	Valley Farms
Yield of		
Corn	44 bushels	55 bushels
Hay	1.3 tons	1.6 tons
Tomatoes	704 baskets	632 baskets
Cabbage	150 crates	218 crates
Sweet corn	71 hampers	75 hampers
Potatoes	85 bushels	131 bushels
Crop values		
Corn, per bushel	$1.00	$1.00
Hay, per ton	10.00	10.00
Tomatoes, per basket	.85	.92
Cabbage, per crate	1.70	1.93
Potatoes per bushel	1.07	1.05
Sweet corn, per hamper	.98	1.29
Crop values per acre		
Corn	$44	$55
Hay	13	16
Tomatoes	542	531
Cabbage	219	366
Potatoes	89	115
Sweet corn	70	97
Returns per unit of labor for		
Corn	7	9
Hay	13	16
Tomatoes	12	12
Cabbage	9	15
Potatoes	7	11
Sweet corn	7	10
Capital, total	$8,562	$19,284
Real estate	6,550	16,573
Livestock	981	886
Machinery	588	908
Equipment for truck crops	162	346
Other capital	780	569
Land, value per acre	54	357

Table XVI. Selected items from the farm business summary of Hill farms and Valley farms in the Marietta Truck section. Five year average, 1920 - 1924 (Concluded)

Item	Hill Farms	Valley Farms
Receipts, total	$1,968	$4,312
Truck crops	1,104	3,765
Livestock and products	556	358
Farm crops	144	81
Increase in feed and supply Inventory	28	27
Other receipts	61	76
Expense, total	1,177	2,227
Labor	481	790
Machinery	85	142
Permanent Improvements	105	169
Feeds purchased	57	130
Fertilizer	92	119
Packages	115	381
Taxes	101	203
Farm Income	791	2,085
Interest on capital at 5 per cent	453	964
Labor Income	339	1,121

1914. The labor income for hill farms in the Marietta section for 1923 and 1924 averaged $727 each year.

The hill farms which include the growing of truck crops in their organization have a larger acreage of land, and grow a larger acreage of field crops but a smaller acreage of truck crops than the valley truck growers on the Devôls Dam terrace. Only the acreage of tomatoes on the hill farms at all closely approximated the acreage grown by the valley growers. The group of hill farms included in the survey averaged an acre and a half each and the valley farms three acres.

The capital invested in the farms of the valley is more than double that of the investment of the hill farms. The greatest difference is in the value of the real estate which ranges from $50 to $60 per acre for the hill farms to $700 to $1000 or more for the valley farms. The valley farms included have an average real estate value of $357 per acre but the farms include nearly as much hill land used as pasture and wood land as valley land used for crop production. The hill farms have more invested in livestock which forms more uniformly a part of the farm business than on the valley farms. One third of the valley farms had practically no receipts from livestock. The valley farms had a larger investment in machinery and equipment. The additional investment was represented largely by trucks, tractors and special equipment for growing plants.

The sale of truck crops were of increasing importance both on the valley farms where such receipts increased from 80 per cent to 83 per cent of all receipts and on the hill farms where the increase was from 50 per cent to 55 per cent. Receipts from the sale of livestock and livestock products varied from 12 per cent to 10 per cent of the total receipts on the valley farms and from 32 per cent to 25 per cent for the hill farms. The sale of farm crops varied from 6 per cent to 9 per cent, and fruit sales from

4 per cent to 6 per cent for the hill farms but were of much less importance for the valley farms.

Expenditures for the valley farms were made at much better advantage than for the hill farms. Total receipts for the valley farms were more than double (219 per cent) that of the hill farms but the total expense of the valley farms was but 89 per cent more. Fertilizer costs were but 30 per cent while such items as labor, machinery and permanent improvement costs were from 60 per cent to 70 per cent more on the valley farms. The valley farms grew a smaller acreage of field crops and accordingly their feed costs were higher by 134 per cent. Expenditure for packages by the valley growers was more than three times that of the growers on hill land. The low expenditure for packages on the hill land was due partly to the fact that the sale of truck crops, there, made up a smaller proportion of receipts and partly to the fact that tomatoes, which on the hill land formed a larger part of the total truck receipts, have a relatively small package cost. Taxes on the hill land near Marietta were assessed at a lower rate than that in Palmer Township but the rate was still lower in those taxing districts which were made up largely of valley land and for much the same reason. Because of the differences in receipts and expenses the farm income of the hill farms was 38 per cent of that of the valley farms and because less effective utilization of capital the labor income was but 30 per cent.

The difference in the income of the two groups is due in part to a difference in the effective utilization of labor, incident to the type of organization. A good distribution of labor is secured by such a type of organization as prevails in Palmer Township. The usual crop rotation provides at least a fair distribution of labor throughout the growing season. The care of livestock provides productive labor during the winter season. With such an organization the farm operators secure an average of 16 labor units

or 16 days of productive labor per month. Such truck crops as are usually grown on the hill farms near Marietta have high labor peaks in May and again in July, months in which there is a decided labor peak in the three year rotation of corn, wheat and clover. A smaller acreage of these crops means less livestock, as well as less work at corn cutting and wheat seeding time as well as less winter plowing. With such a system of production the hill farm operators averaged but 11 units of productive labor per month. The truck crops were sufficiently profitable so that even with the poor distribution of labor a better farm income was secured. For the valley farms the two crops cabbage and tomatoes form the basis for five month trucking season in addition to the growing of plants. An efficient utilization of labor is secured by hiring labor for the season. An average of 14 days of productive labor is secured per month. Efficient utilization of labor in the valleys is increased by the growing of other crops adapted to the light soils and by a convenient farm lay out such as is impossible on most of the rough hill land.

The relative advantages of the farm operators on valley land and those on hill land is apparent from a comparison of yields and average prices received. Table XVI . The two factors are combined in value per acre. Another basis for comparison is that of returns for each unit of labor expended in production. The grower on the hill lands has the advantage in the production of tomatoes. The cabbage crop returns more per acre than corn on hill land and slightly more for each unit of labor but when livestock enterprises are considered in connection with the corn crop the advantage of the cabbage crop is less apparent. For the valley farmers cabbage returns less per acre but more per unit of labor than tomatoes. Returns from the production of potatoes is less than from cabbage or tomatoes; however, the yield of potatoes is low, possibly due to the fact that the crop

is grown only as a secondary crop.

Nature and Cause of Variation in Operator's Income.

The average farm income for the five years was $1465. The average interest on the investment at 5 per cent amounted to $674 or 41 per cent of other production costs except the operators labor. The labor income averaged $791. There was a high degree of correlation, 0.885 on the unit basis, between the two expressions for income, so that either may be used as a basis for comparing the farm operators incomes. In this study the labor income has been used.

The range in the five annual average labor incomes for the 63 farms was $1309 or from 12 per cent to 178 per cent of the average. Table XVII. One of the causes for the variation was the deflation of agricultural prices. The five years included one year of inflated prices preceding the deflation. The effect of the price decline was excluded from the inventories in working up the data so that the direct effect of the changing price level was evident only through the value of products sold. The indirect effect of the deflation was apparent as a lack of confidence in the future. The unprecedented decline in prices in 1920 was at the close of the vegetable marketing season and accordingly affected only farm crops and livestock prices. For the 1921 truck business there was a decided reduction in expenditures. Less labor was employed and less fertilizer purchased though the acreage was not reduced. All truck crop yields except cucumbers were the lowest of the five years and the tomato crop especially matured much more slowly than it had the preceeding years. Undoubtedly climatic conditions were a factor in the lower yields and delayed maturity but apparently were not the only factors. An important cause for the still lower labor income for 1922 was the overproduction of truck crops. Optimism followed the pessimism that had prevailed during the early part of the preceding season. As a result of

Table XVII. The Variation in Income. Marietta Truck Section. Average, 63 Farms for 5 Years.

Item	Five Year Average	1920	1921	1922	1923	1924
Total Receipts	$3102	$3810	$2569	$2269	$3336	$3525
Total Expense	1637	1720	1666	1497	1598	1705
Farm Income	1465	2090	903	772	1740	1820
Standard Deviation	918	1507	861	758	1213	1103
Correlation with 5 year av.		.875	.720	.789	.883	.891
Interest on the Investment	674	683	706	674	656	651
Labor Income	791	1407	197	98	1084	1169
Per cent of Average		178	25	12	137	148
Range	3664	4689	5551	3618	5673	4469
Maximum	3039	4375	2382	2294	4443	4163
Minimum	-625	-314	-3169	-1324	-1230	-306
Standard Deviation	723	1260	911	610	1005	924
Coefficient of	.91	.89	.462	.622	.93	.79
Correlation with 5 year av.		.79	.679	.671	.817	.845

the restored confidence in the market crop acreages were extended and with conditions more favorable for crop production as well as favorable climatic conditions average yields prevailed and a total production half greater than any previous year was marketed. The low prices, by far the lowest of the five years was the important factor in the low labor income of 1922. The net reduction in acreage was but slight. For the following two years compromising variations in the acreage, yield and price of cabbage and tomatoes resulted in a uniform labor income.

The cause for the variation of individual labor incomes other than those which affected the group as a whole may be determined by comparing incomes on the basis of rank rather than that of cash labor income. Comparing farms by rank has a serious disadvantage in that one point difference in rank may be representative of values ranging from a fraction of a dollar to several hundred dollars. The disadvantage is overcome in part at least by considering only differences in rank of five, ten, or more points. In Table XVIII the highest and lowest 20 per cent of the 63 farms are given in order of their rank in five year average labor income. The rank for each year is also indicated.

Many of the farms adhere somewhat closely each year to their five year rank. However, most farms and even those with the most uniform rank during the five years have at least one off year. For the more successful farms the off year is represented by a rank well down toward the middle of the range or below.

The cause for the variation in rank may be explained by variation in organization or management that is associated with the variation in rank. The farm which ranked highest in labor income for the five years

Table XVIII. The Rank of Farms in Labor Income. Highest 20 per cent 1 to 13 and the lowest 20 per cent 51 to 63. 5 Years, 1920 to 1924. Marietta Truck Section.

Five Year Average	1920	1921	1922	1923	1924
1	14	1	1	1	2
2	13-	4	3	15	1
3	4	6	6	4	14
4	12	3	23	3	10
5	1	2	61	8	6
6	7	12	9	7	5
7	3	31	57	2	7
8	11	24	27	14	3
9	6	16	15	19	12
10	2	37	12	18	32
11	17	9	5	23	24
12	10	13	14	32	23
13	9	34	39	13	13
51	49	32	32	57	50
52	52	57	49	43	36
53	48	42	54	46	59
54	63	58	30	30	44
55	54	56	33	50	52
56	43	48	52	49	56
57	55	59	10	60	42
58	40	47	59	52	62
59	41	55	58	51	60
60	59	54	55	54	58
61	53	60	51	61	61
62	60	60	63	59	37
63	47	62	60	62	63

ranked for each of the years consecutively, 14, 1, 1, 1, and 2nd. As contrasted with the first year the second and later years were characterized by an increase in the size of business, larger acreage of cabbage and tomatoes, better quality of product, evidenced by relatively higher prices and that without increasing the expenditure for labor, better labor efficiency.

One grower dropped from 7th to 12th (6th in five year rank) place by increasing expense, mainly for labor, without increasing the size or efficiency of his business. The man who ranked 3rd for the five years dropped from fourth to 14th place as his labor costs increased and with the purchase of a truck without increasing the size or quality of his business. The rank of three of the ten highest labor income group was materially changed coincident with a change in their acreage, yield, or relative price received for tomatoes, (Price is a quality factor).

One grower as a tenant on a new farm ranked 13th the first year and fourth the second year. For the five years he ranked second. Two growers who depended largely on older sons, dropped in rank when the sons' support was withdrawn. The grower who ranked fifth dropped from second to 61st at the same time that such a change was made. As younger sons grasped the business better the farm rose to eighth place and then to sixth. The lower rank was characterized by a lower yield and relative price rather than any difference in acreage.

Two farmers represented different types of organization. More dependence was placed in livestock production. One, a breeder of beef cattle was seriously affected by the rapid decline in beef prices. As beef prices continued low, his rank for later years was materially improved by increasing the production of truck crops. The other livestock man was a dairyman in addition to his truck crop production. A decided drop in rank was associated with the loss of cows by reaction, the selling of culls following

production records, and the purchase of pure bred cattle. The rank in labor income was regained through increased production. On another farm a lower rank was associated with a change from hogs to dairy cattle as a side line. Later years proved the change justified.

A different angle of much the same causes for variation in labor incomes is apparent from the group of farms that ranked below the average. One such farm ranked relatively high years when a son from college helped during the trucking season. Some growers ranked high the same years that they increased the quality of their business, i.e. had beeter yields or received relatively higher prices. Two of the ten with the lowest average labor income apparently tried to better their rank by increasing the size of their business, hired more labor and extended their acreage but the quality of their business was not improved, their incomes did not increase in proportion to their expense and their rank was lowered. One grower, following the unpromising prospects early in the season of 1921, reduced the amount of labor employed and made no expenditure for fertilizer. The decrease in receipts was much greater than the relative saving in expense and the farm dropped in rank from 39th to 49th. With the former organization reestablished the farm ranked 38th the next year. One grower who was an extensive producer of field corn dropped in rank gradually from 40th to 62nd place. He maintained a uniform production of truck crops. The average grower increased his production. Another grower gradually increased his rank from 61st to 25th during the five years. The improved rank was associated with better quality in his truck crop enterprises, and by gradually increasing the sale of dairy products and with a 300 per cent increase in eggs marketed. Another grower increased his rank from 52nd to 36th place by reducing the acreage, increasing yields and improving the relative price received for truck crops.

There was a marked difference in the variation of the income of the various subgroups in which the 63 farms may be divided. There was much less variation in the labor income of the more successful farms than in the labor income of the more successful farms than in the labor income of those less successful. The average coefficient of standard deviation for the 20 per cent with the highest income was 34.8 and that for the lowest 20 per cent income group 83.8. In other words the more successful group controlled the factors of production in such a way that they more closely met the market demands. The less successful group depended more largely on uncertain climatic conditions or were able less accurately to foretell market demands.

The range of the entire group of farm incomes, the deviation from the mean, varied in a general way inversely with the size of the labor income. For the two years in which the labor incomes were low the coefficient of standard deviation was 462 and 622 and for the three years with relatively high labor incomes the coefficient of standard deviation varied from 79 to 93. Table XVII. Here again is a reflection of the more uniform production of the more successful growers. For the significance of the measures of deviation is that the smaller the total income the larger the proportion received by the more successful 20 per cent. And the larger the total income the larger the proportion received by the less successful 20 per cent. Table XIX. With the lowest labor income for the five years which averaged $98.00 for each of the 63 growers the more successful 20 per cent received 101 per cent of the total and the least successful 20 per cent minus 93 per cent of the total. With the highest labor income which was $1407 the more successful growers received 42 per cent of the total and the least successful, 4 per cent. For the more favorable years the least successful 20 per cent of the farm operators had a small compensation for their labor while for the less favorable seasons their income was not sufficient to allow the usual rate of interest on the investment or in many cases to compensate them for depreciation, on buildings and equipment.

Table XIX. The Distribution of the Total Labor Income Among Subgroups with Varying Labor Income, For Five Years. 63 Farms Marietta Truck Section.

Average Labor Income		Per cent of Total	
Actual	Corrected for change in price level. Basis of 1910-1914	Received by the Highest 20%	Lowest 20%
$ 98	$ 64	101	- 93
197	132	113	- 66
1407	609	47	3
1084	690	41	4
1169	762	42	4

Table XX. The Distribution of Labor Incomes by Subgroups. Five Year Average, Marietta Truck Section, 63 Farms.

Labor Incomes Received by 10% Groups Ranked in Order of Labor Income			Per cent of Total Income Received by	
	Total for			
Average	Group	Cumulative	Each Group	All Groups
$ 2257	$14223	$14223	28.5	28.5
1522	9589	23812	19.2	47.7
1227	7733	31545	15.5	63.2
992	6251	37796	12.5	75.7
823	5183	42979	10.5	86.2
569	3587	46566	7.2	93.4
427	2688	49254	5.4	98.8
269	1695	50949	3.4	102.2
61	387	51336	.8	103.0
-236	-1496	49840	-3.0	100.0

The unequal distribution of labor income as shown in table XX is not without justification. The most successful 40% of the growers during the five years received 75% of the total labor income. They produced 53% of the tomatoes and 66% of the cabbage with but 43% of the total labor employed. The least successful 40% who received but 5% of the total labor income produced 25% of the tomatoes and 16% of the cabbage with 37% of the total labor expenditure.

Conclusions.

The farms included in the Marietta Truck section farm business survey were selected to be representative of the various districts. A check on the representative character of the farms selected indicates that they are a proportional sample of all size groups with more than $500 receipts from truck crops.

For the valley farms 80% of the receipts were from the sale of truck crops, most of which were tomatoes and cabbage. For the hill farms 70% of the receipts were from the sale of truck crops almost all of which were tomatoes.

The valley farms when compared on the basis of capital invested, receipts and expenses were larger than the hill farms which included the production of truck crops and still larger than the hill farms in Palmer Township which did not include truck crop enterprises.

Truck crop production per man was the important factor in determining income. High production was secured either by a large acreage or by an average acreage and high yields. Small acreages were more often associated with low yields.

The organization of the more successful farms was less variable than that of the less successful farms.

During the five years there was an increase in cabbage acreage but not of the tomato acreage on the farms included in the study. The increase in the tomato acreage which was of considerable importance in the district was due to new growers.

A material improvement in production methods characterized the five years. More labor was performed per month of labor employed, truck crop acreage per man was increased, more fertilizer was purchased, truck crop yields were apparently increased and livestock production made more efficient during the five years.

There was some variation in the income of all farms during the five years. The major causes for the variation were the deflation of agricultural prices, lack of confidence in the future resulting in a low production, a rapid acreage expansion with average yields, over-production and low prices.

Other causes were of importance on the individual farms. Among the more important were unwise changes in organization, failure to make changes in organization, variation in farm practices, changes in size or quality of the farm business changing help, accidental causes as hail, flood, etc.

For the five years 60 per cent of the farm operators directing 63 per cent of the labor produced 80 per cent of the vegetables sold and received 55 per cent of the income.